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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,595	06/25/2003	Keisuke Yonehama	239515US2	1422

22850 7590 02/15/2005

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EXAMINER	
OWENS, DOUGLAS W	

ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

CT

Office Action Summary	Application No.	Applicant(s)	
	10/602,595	YONEHAMA ET AL.	
	Examiner	Art Unit	
	Douglas W. Owens	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *16-30* is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/3/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1, 2 and 6 are rejected under 35 U.S.C. 102(a) as being anticipated by Admitted Prior Art (Figs. 6 – 8), henceforth referred to as APA.

Regarding claim 1, APA teaches a semiconductor memory device having a gate electrode (WL1) and a diffusion layer (source/drain regions) comprising:

a plurality of memory cells, each of which including a gate electrode and the diffusion layers;

a first contact layer (116/102b) electrically connected to one of the diffusion layers of a memory cell;

a second contact layer (114b/103) connected to the first contact layer;

a bit line (115) electrically connected to the second contact layer; and

a conductive layer (114a/102a) connected to at least two of the diffusion layers (see Fig. 8) other than the diffusion layer connected to the first contact layer, the conductive layer formed between adjacent gate electrodes being arranged in a direction vertical to the bit line, a height of the conductive layer substantially coplanar with a height of the first contact layer, where "height" is taken to refer to the highest part.

Regarding claim 2, APA teaches a semiconductor memory device, wherein the first contact layer includes a tungsten layer (Page 2, line 43 to page 3, line 2).

Regarding claim 6, APA teaches a semiconductor device, wherein the device is NOR type memory device (first sentence under the Description of the Related Art heading).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3 – 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA as applied to claim 1 above, and further in view of US Patent Application Publication No. 2001/0008311 to Harada et al.

APA teaches a semiconductor device, wherein the first contact layer includes a tungsten film. APA does not teach a semiconductor device, wherein the first contact layer includes a first and second conductive film, the first conductive film comprising titanium and the second conductive film comprising tungsten. Harada et al. teach a semiconductor device (Fig. 2C, for example), wherein the contact layer includes a first (12a) and second (12b) conductive film, wherein the first conductive film is titanium (paragraph [0096]) and the second film is tungsten. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the

teaching of Harada et al. into that of the APA, since it is desirable to prevent unwanted diffusion of tungsten.

5. Claims 7 – 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA as applied to claim 1 above, and further in view of US Patent No. 6,731,538 to Noda et al.

Regarding claim 7, APA does not teach a memory card including the semiconductor memory device. Noda et al. teach a memory card (Fig. 19) including a semiconductor memory device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of APA into the memory card taught by Noda et al. since it is desirable to provide memory for memory cards.

Regarding claim 8, APA does not teach a card holder to which the memory card is inserted. Noda et al. teach a card holder (Fig. 21) to which the memory card is inserted. It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Noda et al. into APA, since it is desirable to securely hold the device of the suggested modification suggested in the discussion of claim 7 above.

Regarding claims 9 and 10, APA does not teach a connecting device to which the memory card is inserted, wherein the connecting device is configured to be connected to a computer. Noda et al. teach a connecting device to which the memory card is inserted, wherein the connecting device is configured to be connected to a computer (Fig. 23). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Noda et al. into APA, since it is desirable to enable

communication between the modified device (discussed in the rejection of claim 7) and external devices.

Regarding claim 11, APA does not teach a memory card including the semiconductor memory device and a controller which controls the semiconductor memory device. Noda et al. teach a memory card including the semiconductor memory device and a controller which controls the semiconductor memory device (Fig. 20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of APA into the memory card taught by Noda et al. since it is desirable to provide memory for memory cards, as well as controlling said memory.

Regarding claim 12, APA does not teach a card holder to which the memory card is inserted. Noda et al. teach a card holder (Fig. 21) to which the memory card is inserted. It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Noda et al. into APA, since it is desirable to securely hold the device of the suggested modification suggested in the discussion of claim 11 above.

Regarding claims 13 and 14, APA does not teach a connecting device to which the memory card is inserted, wherein the connecting device is configured to be connected to a computer. Noda et al. teach a connecting device to which the memory card is inserted, wherein the connecting device is configured to be connected to a computer (Fig. 23). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Noda et al. into APA, since it is desirable to enable

communication between the modified device (discussed in the rejection of claim 11) and external devices.

Regarding claim 15, APA does not teach an IC card including the semiconductor memory device. Noda et al. teach an IC card (Fig. 20) including a semiconductor memory device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of APA into the memory card taught by Noda et al. since it is desirable to provide memory for memory cards.

Response to Arguments

6. Applicant's arguments filed December 8, 2004 have been fully considered but they are not persuasive.

Applicant argues that the conductive layer (102a/114) is not "arrange in a direction vertical to the bit line. The word "vertical" is taken in one of its common meanings, "perpendicular to the plane of the horizon or to a primary axis" or "located at right angles to the plane of a supporting surface" (Merriam-Webster's Collegiate Dictionary). The conductive layer (102a/114) of the admitted prior art is in a direction perpendicular to a primary axis of the bit line (115).

Allowable Subject Matter

7. Claims 16 – 30 are allowed.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DWO

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